MARYLAND FISHERIES

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SHELL PLANTING, 1930

IT WAS THE ENDEAVOR of the Conservation Department this year to plant more shells than in any previous year. It is, therefore, gratifying to be able to announce that the planting for 1930 will exceed 1929 by more than 100,000 bushels, and, when completed, some 830,000 bushels will have been planted upon the depleted natural oyster bars of the Chesapeake Bay and tributaries.

The following report, which covers in detail the plantings, with the exception of the lower counties of the Eastern Shore, including Tangier Sound, Manokin, Nanticoke, and Wicomico Rivers, and Fishing Bay, will probably be of interest to all those connected with or otherwise interested in the oyster industry of Maryland:

Location:	*Bushels*
Chesapeake Bay:	
Three Sisters Bar	26,666
The Diamond, Sharps Island Narrows	26,732
Black Walnut	19,320
Poplar Island	46,830
Love Point	38,098
Holland Point	13,916
Parkers Rock	11,296
Wire Ground	1,480
Stone Rock	78,272
James Point	25,444
Thomas Point	12,520
Long Bar	6,050
Hackett's Sands	2,345
Inside Swan Point	3,351
Total	312,320

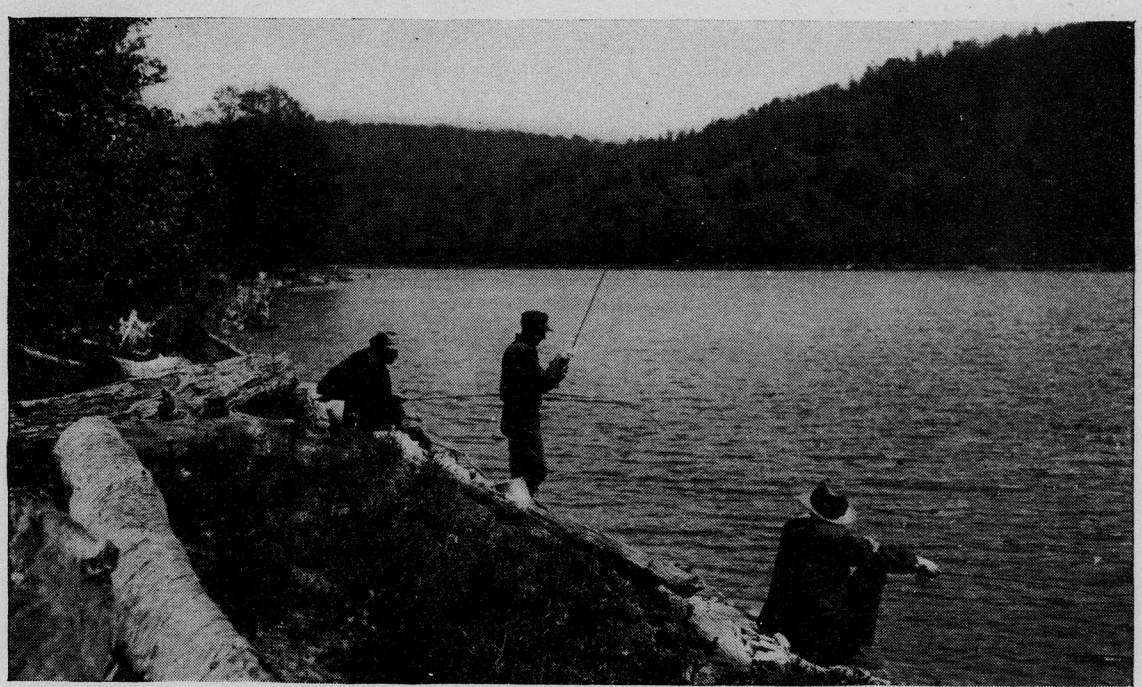
Location:	*Bushels*
Honga River:	
Above Bentley	8,258
Fox Creek	3,820
Thorofare Bar	5,813
Total	17,891
South River:	
Potato Hill	3,807
Patuxent River:	
Neal's Bar	3,255
Hogneck	3,756
Dixon	3,630
Hawk's Nest	1,704
Town Creek	9,138
S. E. Middle Ground	4,137
Swash inside Middle Ground	1,644

Location:	*Bushels*
Patuxent River—Cont.	
Millstone	9,183
Goodwin	2,838
Sandy Point	1,668
Ben's Creek	783
Parker's	1,260
Total	42,996
Little Choptank:	
Old Rock	14,900
Choptank River:	
Green Point	11,200
Middle Ground	7,948
Royston Island, Broad Creek	4,000
Boling Broke	10,548
Total	33,696
West River:	
Saunder's Bar	3,249
Middle Ground	1,561
Total	4,810
Smith's Creek:	
Edward's	4,000
West Barnes Shore	2,000
East Barnes Shore	2,000
Old Hare	1,900
Lewis	2,000
Long Bar	4,000
Total	15,900
Miles River:	
Sea Turtle Bar	20,900
Eastern Bay:	
Parson's Island	9,536
Pea Hill, Cox Creek	4,640
Ringgold Middle Ground, Cox Creek	5,548
Bugby Bar	21,800
Cox Creek, Crab Alley Creek	8,564
Wild Ground	12,780
Mill Hill, Prospect Bay	3,440
Total	66,308
Chester River:	
Hale Point	812
Eagle Point	7,820
Total	8,632

Location:	*Bushels*
Wicomico River: (Charles and St. Mary's Cos.)	
White Point	2,265
Wind Mill	975
Middle Ground	2,925
Shipping Point	1,950
Lancaster	4,637
Fennel	975
Pond Point	975
Mouth of river	4,357
Total	19,059
Breton Bay:	
Stanel Run	710
Blue Sow	1,280
Harry Jack	2,060
Total	4,050
St Clement's Bay:	
Raccoon	2,000
Bluff Woods Hill	5,968
Horseshoe Neck	6,712
Cornishes	2,540
The Wreck and Jones Point	3,036
Total	20,256
Herring Bay:	
Daugherty Hill	1,000
Fishing Bay:	
Old House	1,957
Goose Creek	1,068
Total	3,025
Tred Avon River:	
Tilghman Point	676
Middle Ground	1,410
Thirds	2,757
Mare's Point	249
Ferry Bar	1,200
Fox Hole	1,200
Bachelor	1,280
Back Shore	600
Townsend	600
Orem's	600
Total	10,572
Big Annemessex River:	
Harris Addition	6,000
Pocomoke Sound:	
East of Watkins Bar	16,069
Marumsco	17,659
Total	33,728

THE POLLUTION SITUATION IN MARYLAND

EVERY YEAR, during the summer months, starting about the middle of June, the department experiences a considerable mortality of fish, due to pollution or other causes which affect the navigable waters of the State. Back River and Bodkin Creek have been the subject of endless investigations by the Conservation Department and the State Board of Health. In the opinion of the latter, the extensive growth of algae, which some persons thought indicated the presence of pollution in the waters, and which certainly gives them an unsightly appearance and discourages bathing therein, is caused by the extreme heat and sunlight of the summer weather. It is not believed, however,



Deep Creek Lake, Garrett County

that algae caused the fish mortality which, during the past month, has been rather extensive in both Middle River and Bodkin Creek. Neither is it the opinion of the State Board of Health that the disposal plant of Baltimore City is the cause of this mortality of fish. As the period of mortality is limited, it makes study of the areas in question rather difficult.

Even at this time of the year, when fish have been found dead in this locality, especially in Middle River, the department also has a report showing that many more fish are being caught in these waters than have been found for a number of years, partly due to the work of the department in stocking these waters and partly to a greater supply of fish in the upper Bay.

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A determined effort is being made on the part of the Izaak Walton League to aid the Conservation Department in preventing pollution in the fresh-water streams of the State, especially the Potomac River, which is polluted in many places from Keyser, West Virginia, to the National Capital. Many manufacturing plants are throwing their waste into the Potomac, including two large cities. It is the opinion of the Conservation Department that a concerted movement must be made all along the Potomac to see that disposal systems are established at plants to care for their waste instead of permitting it to go into the waters of this important river as at present. The Potomac should be one of the best bass rivers in the East and should furnish sport for the anglers of Maryland, the District of Columbia, West Virginia, and Virginia.

To show that it is a natural, large-mouth-bass stream, every year that a freshet occurs, thousands of bass are washed over into the pools of the canal, and these are seined out through the cooperation of the department and the Izaak Walton League and returned to the Potomac proper. Last year over 15,000 fish were salvaged through this means.

It is useless for the department to raise fish to a legal size and then turn them into some polluted stream to perish. In the commercial waters of the Chesapeake Bay we feel that oil pollution is so well in hand, through the work of the Government in cooperation with the State, that it is no longer a serious menace to fish life. Nevertheless, vigilance on the part of the states is always necessary to prevent ships from carelessly pumping their bilge into the waters of the Chesapeake.

As a whole, it is felt that pollution in Maryland has been curbed to a very great extent, and in many localities has been cleaned up to the complete satisfaction of the department. In the past, manufacturers were encouraged to establish their plants within the State, and the public streams were referred to as the natural and easiest means of disposing of their waste. At this time the department is watching every plant that is being established within the boundaries of Maryland, to see that proper disposal systems are established at the time the plant is erected. By this means we will eliminate future trouble and the waters of the State will be clean and safe for all forms of fish life.

THE SEVERN RIVER ASSOCIATION MEETS

THE 20th annual dinner of the Severn River Association was held at Annapolis on the evening of June 25. Mr. P. M. Womble, president since this organization was created, was reelected president for the twentieth time.

The Severn River Association is comprised of 130 residents of the Severn River section, men of outstanding importance not only

to Anne Arundel County but to the State. This association works with the Conservation Department to conserve the natural resources, and at the same time helps to protect the Severn River, at the head of which is located one of the most important fish hatcheries of the State.

This year's annual meeting was well attended and talks were made by Conservation Commissioner Swepson Earle, State Game Warden E. Lee LéCompte, U. S. Deputy Game Warden Talbott Denmead, and others. Mr. Earle, in referring to the fish-hatchery work in Maryland, summarized what had been accomplished in Western Maryland since the State-wide angler's license above tide-water was passed by the Legislature of 1927, enabling the department to enlarge the Lewistown trout hatchery and establish the Bear Creek Station and nurseries in a number of sections where fish are reared to legal size before planting into public waters.

Commissioner Earle also touched on the Bay fish work and referred to the increase in the crab supply since 1926, owing to the passage of legislation in Virginia. He also stated that the streams of Western Maryland must be well stocked in order to supply the anglers of that section and provide sport for the ever increasing number of visitors who come to Maryland to enjoy the sport of fishing the upland streams for game-fish.

Mr. LéCompte referred to his recent inspection of the State game preserves in Western Maryland and the work of raising bob-white quail at the State game farm in Baltimore County and the farm located in Wicomico. Mr. LéCompte spoke very encouragingly about the prospects for game during the next hunting season.

Mr. Talbott Denmead in his talk dealt with the migratory wild fowl and referred to the trip he had just made in the western part of the United States and to certain lakes where wildfowl congregate in large numbers. He also referred to the cooperative work in Maryland with the Biological Survey.

In President Womble's talk before the association, he pointed with pride to the fact that Severn River had been a sanctuary for some years and, through the efforts of that association, it had been maintained as such to prevent nets from slaughtering fish that were seeking the spawning grounds. The association was assured by Mr. Earle that the Conservation Department would do its best to see that the Severn River was kept a sanctuary, as it is absolutely necessary to give the fish a chance to reach the spawning grounds in Severn River where the State hatchery operates. To show the importance of this river in the hatching of yellow perch, he stated that 360,000,000 perch, or more than half of the entire State's output, came from this station located at the head of Severn River and were planted in many streams on the Western Shore.

VIRGINIA OYSTER INVESTIGATION

IN response to the request of the State of Virginia, the Federal Government has undertaken an investigation of the oyster-growing region in the lower part of Chesapeake Bay for the purpose of determining the most suitable methods for increasing the production of oysters. A preliminary survey of the oyster grounds in Mobjack Bay and lower Chesapeake Bay was made on April 8 and 9 by W. H. Dumont, of the United States Bureau of Fisheries.

A high mortality of oysters on the planted beds has been reported by several planters. Correspondence from planters in York, Rappahannock, and Piankatank Rivers indicated that oysters in those streams were affected also, but James River and Hampton Bay did not seem to have been affected. Inspection of various beds in January by the planters showed the oysters to be very poor, but alive, though showing no new shell growth. When examined during March a large number were found dead.

Oyster planting in Mobjack Bay was started on a small scale about 10 years ago. As these first attempts were successful, more bottom was leased and planted each year so that on January 1, 1930, there were in the Mobjack Bay section approximately 830,000 bushels of planted oysters. Over 95 per cent. of the seed comes from James River, the rest from North Carolina.

The highest mortality is in the northern section of Mobjack Bay on the mud bottom, and at least on the sandy grounds extending out into Chesapeake Bay and in shoal waters on the eastern side of Mobjack Bay. Of the 830,000 bushels planted in this section, approximately 500,000 bushels (60 per cent.) have died in the past three months.

During the week of May 12 a field laboratory was established at Yorktown and a cruise made over the oyster grounds in Mobjack Bay, York River, and James River, by H. F. Prytherch, who will have immediate charge, and Mr. Dumont. The oysters on both the natural and cultivated beds in York River and Mobjack Bay were found to be in a very poor and watery condition and showed very little growth or reproductive development.

The studies up to the present time indicate that the poor condition and recent heavy mortality of oysters in this region may be due to a lack of sufficient nourishment for normal growth and for the storage of energy that is necessary to carry them over the period of hibernation. Several factors have apparently contributed to the loss of oysters in Mobjack Bay. One factor may be the late spawning during the previous summer, which resulted in a shortening of the recuperative period in the fall before hibernation. Overcrowding of the oysters on maturing grounds where the bottom is of a soft, unfavorable character, or a reduction of the food supply in the water over the oyster beds as

a result of decreased river discharge and the dumping of toxic trade waste into these streams, may be responsible. The oysters clearly showed and recorded the effect of these conditions by a cessation and retrogression in the growth of the shell, which in many cases was followed by death of the animal.

Abnormal and deficient shell growth of this type has been reported by oyster growers from several localities and, within the past week, has been found in oysters that were grown by the bureau under experimental conditions in Milford Harbor, Conn. Although the oysters on the densely planted areas showed this damage and a high percentage died during the winter, those on the adjacent plots, where fewer oysters were planted, showed a normal growth and no mortality occurred.

On these experimental plots oysters of the same age and size were planted under uniform conditions in concentrations ranging from 200 bushels to 3,000 bushels to the acre. The areas on which 1,000 bushels or more were planted per acre were the ones on which a heavy loss occurred as a result of overcrowding.

The conditions in Milford Harbor under which these oysters were planted were superior in many respects to those found on the beds in Mobjack Bay, and it is possible that this latter area is incapable of supporting such heavy plantings of oysters as were made there during the past fall and winter.—*U. S. Fisheries Service Bulletin.*

SOME OBSERVATIONS ON THE STRIPED BASS

By W. J. HADDAWAY

Editor's Note: In recent years many fishermen have been attracted to the commercial waters of Chesapeake Bay for the sport of trolling for striped bass, or rock, as they are commonly called. During certain months the sport is more successful than at others, and large catches, as high as 50 or 60 fish weighing from 8 to 12 pounds each, have been made. While this is an unusually large quantity of fish, a number of anglers, who troll at various points along the Bay, have done equally well. For the benefit of the average fisherman, who tries his luck once or twice during a season, the following information on the habits of the striped bass will be of interest. Captain Haddaway has spent his entire life on the Chesapeake and Great Choptank.

FOR a number of years the ways and habits of the striped bass, or rock, have been of special interest to me. It has been my pleasure to be around sections of Chesapeake Bay where these fish are found in large numbers. It has also been my pleasure to catch a good many of these fish in various ways. To my mind, trolling for rock is the greatest thrill of all. This method of fishing usually results in a larger catch, because the professional troller does not waste much time trolling where fish are scarce or scattered.

The first thing on the program when the fisherman reaches a section where rock are usually found is for the guide or other person in charge of the boat to look around for some sign. The first thing to look for is feed, as rock are seldom found unless there is an abundance of live minnows or worms. If large quantities of these are in evidence, the next thing the guide will do is to scan the horizon for sea-gulls. Where rock are found gulls are always at hand. When the fish are near the bottom, the gulls usually float around on the surface of the water. This is a sign for the fisherman to fish near the bottom by using heavy sinkers on the line. If, on the other hand, the gulls are flying around, dipping into the water now and then, it is an indication that the rock are near the top of the water, and lighter sinkers should be substituted, so as to troll near the surface.

The question is often asked, "Why do sea-gulls follow schools of fish?" When the live minnows are near the top of the water, this is the time the fish usually feed on them, and many are forced to jump out of the water when pursued by a large school of hungry rock. The gull is well aware of this fact, and when the minnow jumps to escape the rock he is quickly snatched by the watchful gull. Many, too, are wounded by the fish and are caught and eaten by the gulls. So the minnow serves as food for all.

There are many other signs, however, that are watched by the experienced fisherman. The habits of the rock are unlike those of other fish. They are not a migratory fish like the shad and are not very friendly to other fish. They like to be in schools by themselves. The rock of our Bay do not travel very far. They have their accustomed places to which to go, and they go through about the same routine each year. If February happens to be a fairly warm month, they begin to move out of the deep channel of the Bay and work their way to some shallow spot, but still near the deep water. Old fishermen claim they do this to get sunlight, which seems essential to all life. They select some place where it makes shallow near the deep water where they hibernate all winter, so, if the occasion arises and a sudden cold snap comes on, they can dart back quickly to their winter quarters. They usually stay around this sort of a place until the middle of March. From that time until the middle of April they come in and scatter in every direction. About the first of May they are found in shallow water, generally around grassy bottoms or possibly stone bottoms or some place where barnacles are found. The female (or Roller rock) begins to work her way to the head waters of some creek or river to spawn, which occurs in May or June. After this, they get together again and form large schools. This continues until the last of October or the middle of November.

In August and September, rock are again found in very shallow water. These are the best months for casting. They are

quite easy to locate, particularly the large fish. Some of the very largest rock are caught in quite shallow water, sometimes in water of two to three feet deep. To catch them in such water one has to be careful and keep quiet. The fish usually seek clear water and are easily frightened. At this season also a great many are caught by haul seines. After the middle of September they slowly work their way back to the Bay. These observations have been made in the Choptank and Miles Rivers and in Eastern Bay; it is presumed that the habits of the rock are the same elsewhere.

Each day, from then until November 1, rock are found near the edge of the deep channel of the Bay in readiness for their winter quarters. If November happens to be warm, quite often they can be found on top of the water, and at times will take the bait. They are now prepared to hibernate for the long, winter months. From this time until March they should not be molested. Unfortunately, this is not the case. Fishermen, by careful study and experience, know the habits of all species of fish, especially our native fish. They know exactly where to locate them, and in the last few years they have devised nets to catch them at any depth and at any time. The laws of the State permit this to be done to the detriment of the fishing industry.

In the winter of 1928, hundreds of tons of rock were caught between Cove Point and Love Point by the sunken drift net. Fishermen say there were more fish caught that year than ever before. They do not say how many more rigs were operated than ever before. Fish were never caught by these methods until recent years. Under the existing laws it will be impossible to maintain an abundance of rock very long. About the only help we have is the size and weight law. This, however, is not enough to assist nature in keeping up our supply.

From June 15 until November the purse-net fishing is allowed. From November other devices and nets are permitted to operate. This gives the fish no rest period, and, with all the improved devices for catching and nothing for assisting nature, how can we hope to maintain our great sea-food industry? The question is easy enough to solve if we could get people interested enough to make some sacrifice. When commercial fishermen and sport fishermen are ready to meet the issue, fairly and squarely, and cast aside all selfish interests, something can be accomplished. It is hoped the commercial fishermen will soon see their way clear to ask for a curtailment of the methods so detrimental to their own interests.

OYSTERS SPAWN IN MARYLAND WATERS

A REPORT received from the Chesapeake Biological Laboratory at Solomons Island, under date of July 11, states that the oyster spawning season is now at its height in the waters of Chesapeake Bay. According to Dr. R. V. Truitt, in charge of the station, the

records show 15,000 oyster larvae to 50 gallons of water. Last year oysters spawned quite late, the peak occurring in early September.

A number of biology students from the University of Maryland are assisting Dr. Truitt in his experiments at the laboratory this summer, and it is expected that some interesting information will be developed.

WILLIAMSPORT CHAPTER OF IZAAK WALTON LEAGUE FORMED

THE IZAAK WALTON LEAGUE OF AMERICA continues to win many recruits in Maryland each year. The most recent addition to the league in Washington County, where this organization has always been very active, is the Williamsport Chapter, which was presented its charter on July 9 by Dr. M. D'Arcy Magee, president of the District of Columbia Chapter. Sixty men from Williamsport and vicinity went in as charter members, and Mr. David K. Cushwa was elected president of the organization.

Conservation Commissioner Swepson Earle attended this meeting, as well as Dr. Lewis Radcliffe, Deputy U. S. Commissioner of Fisheries, from Washington. Dr. Radcliffe spoke on the fishery situation of the country and the endeavor of the Bureau of Fisheries to cooperate with the states. He also outlined what the bureau planned in connection with increased hatchery work.

The Maryland Commissioner referred to the trout season in Western Maryland and the department's work in raising larger fish for stocking the streams. He also spoke about the commercial fish-hatchery work and the desire of the department to work with the State of Virginia in freeing the waters of nets, so that migratory fish may have a chance to reach the spawning grounds.

ABOVE-TIDE-WATER BASS SEASON OPENS

THE OPEN SEASON for the taking of black bass *above tide-water* in Maryland began July 1. From then until November 30, this much-prized fish will be the object of pursuit and discussion among those who consider angling the sport *par excellence.* Hundreds of anglers availed themselves of the opportunity to enjoy this sport, and, incidentally, the delightful summer weather, on July 1, and reports coming to the department indicate that the majority were successful. Those who were disappointed on the first day received enough encouragement from their friends to inspire them to try their luck again.

Washington Countians report from 4 to 10 black bass were the reward of a number of fishermen who went out on the opening day. At Dam No. 4 on the Potomac River, some very fair catches were made, as well as on sections of the river around Williams-

port, Hancock, Shepardstown, Harper's Ferry, and Point of Rocks. It is stated that the Potomac will probably afford better fishing this year than for sometime past, as the waters are clear and thousands of bass can be seen in search of food on the bottoms.

Bass are not permitted to be caught in the *tidal waters* of the State during the months of April, May, and July, so those who fish for bass in these waters must wait until August 1 to do so. Among these waters, Back and Middle Rivers, Big and Little Blackwater, Transquakin, Bohemia, Sassafras, Susquehanna, and others are noted for bass fishing, and it is felt they should provide better sport this season than for sometime, since these streams will have had the benefit of two months closed season in 1929 and four months this year, until August 1, during which time fishing by hook and line, as well as by nets, was prohibited. It will be interesting to learn whether these streams have been benefited by the rest.

Middle and Back Rivers, which include such well-known bass fields as Frog Mortar, Normans and Stansbury Creeks, as well as Seneca and Dundee, while closed to bass fishing during this period, have, nevertheless, provided recreation in the form of crabbing which has been enjoyed by great numbers of people since the opening of the season in May.

FEMALE CRABS PROTECTED

AT A RECENT MEETING of the Advisory Committee of the Conservation Department during which the subject of the greatly increased supply of crabs in the Bay was discussed, an interesting fact was brought out. It was stated by one of the members of the committee that in certain localities of the State where crabs are very plentiful the female crab is not being used at all by the crab packing-houses. Many years ago, before the demand for crabs was very great, this was the practice, but when crabs became scarce, as they were prior to the passage of the Acts of 1926 in Virginia, female crabs were taken and cooked as well as males, and even the female crab bearing the egg-sponge was caught and utilized by Virginia crab packers. However, with the present plentiful supply of crabs, the females are being protected, the demand being fully met by the use of male crabs alone. This condition is most encouraging and almost assures the perpetuation of the crabbing industry in Chesapeake Bay.

The shipment of soft crabs in trays properly iced and carefully prepared assures their arrival in perfect condition—the mortality, if any, being negligible. On the contrary, there is a very great mortality experienced in the shipment of hard crabs, from 30 to 40 per cent. to a barrel being lost. This waste should be eliminated, not only for the profit of the shipper but in order to place the crabs on the market in better condition than they are at present received.

STATE-MANAGED FISHING SUCCESS IN CONNECTICUT

Angling Opportunities, Otherwise Lacking, Furnished Thousands of Sportsmen—System is Being Extended

TWENTY STREAMS are now leased and stocked by Connecticut and are ready for public fishing. About 40,000 licenses were taken out when the season opened, April 15, says the American Game Protective Association News Service.

The leased streams alone contained more than 78,000 legal-length trout which had been put in since last season, besides thousands left over from last year.

More than 300 other streams which are not under state lease but are open to public fishing had also been stocked by the state board of fisheries and game. Officials report that, in adition to these streams, the state has acquired rights over more than 75 miles of tributary brooks which have been closed to fishing and are being used as breeding waters.

A pamphlet has been prepared giving information about regulations which govern the use of leased streams and other waters and many facts concerning important laws relating to angling. These are being distributed by wardens, patrolmen, and at the office of the board of fisheries and game.

The new regulations, which govern fishing under the new and extensive system of stocking streams in Connecticut, require that anglers must keep within 10 feet of the banks of the stream. Where step-overs are provided, they must be used. Cultivated or open lands must not be crossed without permission. Building of fires is not permitted without permission of the fire warden and consent of the landowner. Spearing is not permitted in any state-leased stream without permission from the board. Motor-vehicle parking is not permitted in front of bar-ways, or inside bar-ways without permission of the owner. Designated entrances and exits must be used. Posted instructions must be followed. The creel limit on most streams is 20 trout.—*American Game Protective Association.*

USE BIG HOOKS, SAVE SMALL FISH

If anglers would make a practice of using large-sized fish-hooks thousands of small fish would be saved, the American Game Protective Association's observers report. It is illegal to take undersized fish. Besides, the majority of fishermen do not want small fish. They are put back into the water after they are taken from the hook. Many of them die from injuries.

Those fishing with worms, meat, or live bait should use a large-sized hook so that the smaller fish cannot swallow or impale themselves upon it. It is the small hook that does the damage. Fly fishermen who use small hooks are not usually troubled with small fish, for they seldom strike.—*American Game Protective Association.*